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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,913	02/03/2006	Wolfgang Dahms	B-7252	4573
7590	08/06/2010		EXAMINER	
Frank J. Bonini, Jr. Harding, Earley, Follmer & Frailey 86 The Commons at Valley Forge East 1288 Valley Forge Road, Post Office Box 750 Valley Forge, PA 19482-0750				WONG, EDNA
ART UNIT		PAPER NUMBER		
1795				
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		08/06/2010		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,913	DAHMS ET AL.	
	Examiner	Art Unit	
	EDNA WONG	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 22 July 2010.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,3-20 and 24-32 is/are pending in the application.
 4a) Of the above claim(s) 27 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,3-20,24-26 and 28-32 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____ .

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 22, 2010 has been entered.

This is in response to the Amendment dated July 22, 2010. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Election/Restrictions

This application contains claim **27** drawn to an invention nonelected with traverse in the reply filed on April 21, 2009.

Claim Rejections - 35 USC § 112

Claim **29** has been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejection of claim 29 under 35 U.S.C. 112, first paragraph, has been withdrawn in view of Applicants' remarks.

Claim Rejections - 35 USC § 102/103

I. Claims **1, 3, 8-16, 19-20 and 28** have been rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Cobley et al.** (US Patent No. 6,652,731 B2).

The rejection of claims 1, 3, 8-16, 19-20 and 28 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cobley et al. has been withdrawn in view of Applicants' amendment.

II. Claims **24-26** have been rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Cobley et al.** (US Patent No. 6,652,731 B2) as applied to claims 1-3, 8-16, 19-20 and 28 above.

The rejection of claims 24-26 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

III. Claims **1, 4-16, 19-20 and 28** have been rejected under 35 U.S.C. 102(e) as

anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Gabe et al.** (US Patent No. 6,773,573 B2).

The rejection of claims 1, 4-16, 19-20 and 28 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gabe et al. has been withdrawn in view of Applicants' amendment.

IV. Claims **24-26** have been rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Gabe et al.** (US Patent No. 6,773,573 B2) as applied to claims 1, 4-16, 19-20 and 28 above.

The rejection of claims 24-26 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gabe et al. as applied to claims 1, 4-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claim **2** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent No. 6,652,731 B2) as applied to claims 1, 3, 8-16, 19-20 and 28 above.

The rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

II. Claim 7 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent No. 6,652,731 B2) as applied to claims 1, 3, 8-16, 19-20 and 28 above.

The rejection of claim 7 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

III. Claims 17 and 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent No. 6,652,731 B2) as applied to claims 1-3, 8-16, 19-20 and 28 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

The rejection of claims 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28 above, and further in view of Todt et al. has been withdrawn in view of Applicants' amendment.

IV. Claim 29 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent No. 6,652,731 B2) as applied to claims 1, 3, 8-16, 19-20 and 28 above.

The rejection of claim 29 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

V. Claim 2 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent No. 6,773,573 B2) as applied to claims 1, 4-16, 19-20 and 28 above.

The rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. as applied to claims 1, 4-16, 19-20 and 28 above has been withdrawn in view of Applicants' amendment.

VI. Claims 17 and 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent No. 6,773,573 B2) as applied to claims 1-2, 4-16, 19-20 and 28 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

The rejection of claims 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. as applied to claims 1, 4-16, 19-20 and 28 above, and further in view of Todt et al. has been withdrawn in view of Applicants' amendment.

Response to Amendment

Claim Objections

Claims 1, 7 and 31 are objected to because of the following informalities:

Claim 1

line 5, a -- : -- (colon) should be inserted after the word "formula".

Claim 7

line 3, a -- : -- (colon) should be inserted after the word “of”.

Claim 31

line 5, a -- : -- (colon) should be inserted after the word “formula”.

line 14, the word “that” should be amended to the word -- than --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

I. Claims **31 and 32** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 31

line 14, recites “less than 1.0 **g/L**” (= 1000 mg/L).

Applicants’ specification discloses that:

The amount of the at least one aromatic halogen derivative, or of the salt thereof respectively, that is to be added to significantly improve copper deposition is extremely low. The concentration thereof ranges preferably from about 0.005 to **about 0.9 mg/l**, more preferably from about 0.005 to about 0.5 mg/l, a concentration of about 0.02 or

more being particularly preferred, a concentration of about 0.3 mg/l or less being even more preferred and a concentration in the range of from about 0.02 to about 0.2 mg/l being most preferred (page 5, line 24 to page 6, line 2).

II. Claims **11 and 28** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11

line 5, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 7, the symbol “Δ” should be amended to the symbol -- ρ --.

line 7, the letter “T” should be amended to the symbol -- ω --.

line 8, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 9, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 10, the letter “T” should be amended to the symbol -- ω --.

line 11, “acid-S-(T-sulfoproyl)-ester” should be amended to -- acid-S-(ω-sulfopropyl)-ester --.

Claim 28

line 5, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 7, the letter “T” should be amended to the symbol -- ω --.

line 8, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 9, the letter “T” (both occurrences) should be amended to the symbol -- ω --.

line 10, the letter “T” should be amended to the symbol -- ω --.

line 11, “acid-S-(T-sulfoproyl)-ester” should be amended to -- acid-S-(ω-sulfopropyl)-ester --.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

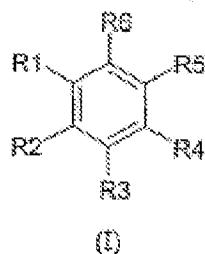
Solution

I. Claim 31 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1).

Cobley teaches an aqueous acidic solution for electrolytically depositing copper coatings, said solution containing:

- copper ions (= a copper compound) [page 5, [0052]],
- at least one oxygen-containing, high molecular additive (= an oxygen containing high molecular weight compound) [cols. 4-5, [0047]], and
- at least one water soluble sulfur compound (= a brightener) [col. 4, [0044]],

characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R1, R2, R3, R4, R5 and R6 are each independently radicals selected from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having

1- 4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 (= an aromatic aldehyde having the following formula: R¹-CHO) [page 3, [0029] to [0031]],

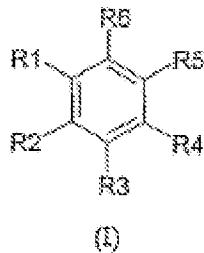
wherein the concentration of the at least one aromatic halogen derivative having the formula (I) is less than 1.0 g/L (= the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath) [page 4, [0040]].

II. Claim 31 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1).

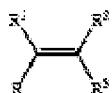
Gabe teaches an aqueous acidic solution for electrolytically depositing copper coatings, said solution containing:

- copper ions (= a copper compound) [page 6, [0057]],
- at least one oxygen-containing, high molecular additive (= an oxygen containing high molecular weight compound) [page 5, [0052]], and
- at least one water soluble sulfur compound (= a brightener) [page 5, [0050]],

characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R1, R2, R3, R4, R5 and R6 are each independently radicals selected from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having 1- 4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 (= an



alcohol including compounds having formula I: , where R¹ and R² are taken together along with the atoms to which they are attached to form a 5 to 7 membered carbon ring) [page 3, [0030] to page 4, [0033]],

wherein the concentration of the at least one aromatic halogen derivative having the formula (I) is less than 1.0 g/L (= the alcohols are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath) [page 5, [0046]]

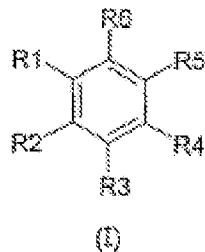
Claim Rejections - 35 USC § 103

Solution

I. Claims **1, 3, 8-16, 19-20 and 28-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1).

Cobley teaches an aqueous acidic solution for electrolytically depositing copper coatings, said solution containing:

- copper ions (= a copper compound) [page 5, [0052]],
- at least one oxygen-containing, high molecular additive (= an oxygen containing high molecular weight compound) [cols. 4-5, [0047]], and
- at least one water soluble sulfur compound (= a brightener) [col. 4, [0044]], characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R₁, R₂, R₃, R₄, R₅ and R₆ are each independently radicals selected from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having 1- 4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R₁, R₂, R₃, R₄, R₅ and R₆ which are halogen ranges from 1-5 (= an aromatic aldehyde having the following formula: R¹-CHO) [page 3, [0029] to [0031]].

The aldehyde is selected from the group consisting of formyl (-CHO), methylformyl (-CH₂-CHO) and ethylformyl (-C₂H₄-CHO) [= an aromatic aldehyde having the following formula: R¹-CHO] (page 3, [0029] to [0031]).

The at least one oxygen-containing, high molecular additive is selected from the group consisting of polyvinyl alcohol; carboxymethyl cellulose; polyethylene glycol; polypropylene glycol; stearic acid polyglycol ester; oleic acid polyglycol ester; stearyl alcohol polyglycol ether; nonylphenol-polyglycol ether; octanol polyalkylene glycol ether; octanediol-bis-(polyalkylene glycol ether); poly(ethylene glycol-ran-propylene glycol); poly(ethylene glycol)-block-poly(propylene glycol)-block-poly(ethylene glycol); and poly(propylene glycol)-block-poly(ethylene glycol)-block-poly(propylene glycol) [pages 4-5, [0047]].

The at least one water soluble sulfur compound is selected from the group consisting of organic, nitrogen-free thio compounds and the salts thereof (page 4, [0044]).

The salts contain alkali or earth alkali metal ions, selected from the group consisting of sodium, potassium, magnesium and calcium (page 4, [0044]).

The at least one organic nitrogen-free thio compound is selected from the group consisting of sodium salt of 3-(benzthiazolyl-2-thio)-propylsulfonic acid; sodium salt of 3-mercaptopropane-1-sulfonic acid; disodium salt of thiophosphoric acid-O-ethyl-bis-(ω -sulfopropyl)-ester; trisodium salt of thiophosphoric acid-tris-(ω -sulfopropyl)-ester; sodium salt of ethylenedithio dipropyl sulfonic acid; disodium salt of bis-(ρ -sulfophenyl)-disulfide; disodium salt of bis-(ω -sulfopropyl)-sulfide; disodium salt of bis-(ω -sulfopropyl)-disulfide; disodium salt of bis-(ω -sulfohydroxypropyl)-disulfide; disodium salt of bis-(ω -sulfobutyl)-disulfide; sodium salt of methyl-(ω -sulfopropyl)-

disulfide; sodium salt of methyl-(ω -sulfobutyl)-trisulfide; potassium salt of O-ethyl-dithiocarbonic acid-S-(ω -sulfoproyl)-ester; and thioglycolic acid (page 4, [0046]).

Acid is contained in the solution and that the acid is selected from the group consisting of sulfuric acid, hydrochloric acid, fluoboric acid and methanesulfonic acid (= sulfuric acid) [page 5, [0055]].

The solution additionally contains chloride ions (page 5, [0051]).

The chloride ions have been added to the solution in the form of sodium chloride and/or of hydrochloric acid (= HCl) [page 5, [0051] and [0055]].

The solution additionally contains at least one organic, nitrogen-containing compound (page 4, [0045]).

The at least one organic nitrogen-containing thio compound is selected from the group consisting of thiourea; N-acetylthiourea; N-trifluoroacetyl thiourea; N-ethylthiourea; N-cyanoacetyl thiourea; N-allylthiourea; o-tolylthiourea; N,N'-butylene thiourea; thiazolidine thiol-2; 4-thiazoline thiol-2; imidazolidine thiol-2-(N,N'-ethylene thiourea); 4-methyl-2-pyrimidine thiol; and 2-thiouracil (= thiourea) [page 4, [0045]].

The solution additionally contains at least one polymeric nitrogen compound (= alkylated polyalkyleneimine) [page 4, [0045]].

The at least one polymeric nitrogen compound is selected from the group consisting of polyethylene imine, polyethylene imide, polyacrylic acid amide, polypropylene imine, polybutylene imine, N-methyl polyethylene imine, N-acetyl polyethylene imine, N-butyl polyethylene imine (= alkylated polyalkyleneimine) [page 4,

[0045]].

The solution characterized in that wherein, when R1-6 is COH and the radical at a position para to the COH is OH, the radical at the ortho position relative to the COH is a radical other than chlorine, wherein, when R1-6 is COH and the radical at the position ortho to the COH is chlorine, the radical at the position para to the COH is a radical other than OH, and wherein, when a OH radical is at a meta position relative to the position of a radical that is chlorine, COH is not at an ortho position relative to said chlorine radical (= an aromatic aldehyde having the following formula: R¹-CHO) [page 3, [0029] to [0031]].

The solution characterized in that the aromatic halogen derivative of general formula (I) is not any one of 2-chloro-4-hydroxybenzaldehyde, 4-chlororesorcinol and 3-chlorophenol (= an aromatic aldehyde having the following formula: R¹-CHO) [page 3, [0029] to [0031]].

The solution of Cobley differs from the instant invention because Cobley does not disclose the following:

a. Wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/L, as recited in claim 1.

Cobley teaches that the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath (= about 1 mg/L to 100,000 mg/L) [page 4, [0040]].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the at least one aromatic halogen derivative described by Cobley with wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/L because the word “about” disclosed by Cobley permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

With regards to a difference of 0.5 mg/L (= 1 mg/L - 0.5 mg/L), it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed “critical” ranges and Applicant has the burden of proving such criticality; even though Applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP § 2144.05].

b. Wherein the at least one aromatic halogen derivative is selected from the group consisting of 2-chlorobenzaldehyde; 2-chlorophenol; 4-chloro-3-methylphenol; 2-

chloro-4,5-dimethylphenol; 4-chloro-3,5-dimethylphenol; 4-chlorophenol; 3-chlorophenol; o-chloroacetophenone; 2-chlorobenzyl alcohol; 4-bromo-2,6-dimethylphenol; 4-bromophenol; 2,4-dichlorobenzyl alcohol; 2,6-dibromo-4-methylphenol; 2,5-dichlorophenol; 3,5-dibromobenzaldehyde; 2,5-dibromobenzoic acid; 2,4,6-trichlorophenol; and 2,3,6-trichlorobenzaldehyde, as recited in claim 7.

Cobley teaches an aromatic aldehyde having the following formula: R¹-CHO, e.g., 2-chloro-4-hydroxybenzaldehyde (page 3, [0029] to [0031]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the aromatic halogen derivative described by Cobley with wherein the at least one aromatic halogen derivative is selected from the group consisting of 2-chlorobenzaldehyde; 2-chlorophenol; 4-chloro-3-methylphenol; 2-chloro-4,5-dimethylphenol; 4-chloro-3,5-dimethylphenol; 4-chlorophenol; 3-chlorophenol; o-chloroacetophenone; 2-chlorobenzyl alcohol; 4-bromo-2,6-dimethylphenol; 4-bromophenol; 2,4-dichlorobenzyl alcohol; 2,6-dibromo-4-methylphenol; 2,5-dichlorophenol; 3,5-dibromobenzaldehyde; 2,5-dibromobenzoic acid; 2,4,6-trichlorophenol; and 2,3,6-trichlorobenzaldehyde because it has been held that closely related homologs, analogs, and isomers in chemistry creates a *prima facie* case of obviousness. *In re Dillon* 16 USPQ 2d 1897, 1904 (Fed. Cir. 1990); *In re Payne* 203 USPQ 245 (CCPA 1979); *In re Mills* 126 USPQ 513 (CCPA 1960); *In re Henze* 85 USPQ 261 (CCPA 1950); *In re Hass* 60 USPQ 544 (CCPA 1944). See MPEP § 2144.09.

A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. “An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties.” *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). See *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (discussed in more detail below) and *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991) (discussed below and in MPEP § 2144) for an extensive review of the case law pertaining to obviousness based on close structural similarity of chemical compounds. See also MPEP § 2144.08(II)(A)(4)(c) and § 2144.09.

II. Claims **17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) as applied to claims 1, 3, 8-16, 19-20 and 28-30 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

Cobley is as applied above and incorporated herein.

The solution of Cobley differs from the instant invention because Cobley does not disclose the following:

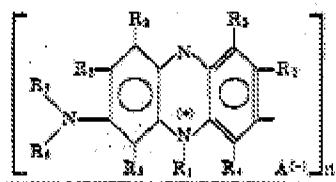
- a. Wherein the solution additionally contains at least one polymeric phenazinium compound, as recited in claim **17**.
- b. Wherein the at least one polymeric phenazinium compound is selected

from the group consisting of poly(6-methyl-7-dimethylamino-5-phenyl-phenazinium sulfate); poly(2-methyl-7-diethylamino-5-phenyl-phenazinium chloride); poly(2-methyl-7-dimethylamino-5-phenyl-phenazinium sulfate); poly(5-methyl-7-dimethylamino-phenazinium acetate); poly(2-methyl-7-anilino-5-phenyl-phenazinium sulfate); poly(2-methyl-7-dimethylamino-phenazinium sulfate); poly(7-methylamino-5-phenyl-phenazinium acetate); poly(7-ethylamino-2,5-diphenyl-phenazinium chloride); poly (2,8-dimethyl-7-diethylamino-5-p-tolyl-phenazinium chloride); poly(2,5,8-triphenyl-7-dimethylamino-phenazinium sulfate); poly(2,8-dimethyl-7-amino-5-phenyl-phenazinium sulfate); and poly(7-dimethylamino-5-phenyl-phenazinium chloride), as recited in claim 18.

Cobley teaches that:

Aromatic and aliphatic quaternary amines also may be added to plating baths to improve deposit brightness. Dyes of the phenazine class (Safranine type) and phenazine azo dyes (Janus Green B type) may be employed as levelers. Polyethers are used to improve thickness and uniformity of metal plating (page 5, [0048]).

Like Cobley, **Todt** teaches an acid copper electroplating bath. Todt teaches that an acid copper electrolyte which is characterized by a content of at least one compound of the general formula:



(col. 2, lines 7-22). One obtains an especially clear and sudden improvement of the

luster and of the leveling effect by adding the substances according to the invention to copper electrolytes which contain as brighteners oxygen-containing, high molecular compounds and organic thio compounds, preferably comprising one or more water-solubilizing group (col. 8, line 62 to col. 9, line 52).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution described by Cobley with (a) and (b) above because adding at least one polymeric phenazinium compound would have improved the luster and the leveling effect of copper electrolytes as taught by Todt (col. 8, line 62 to col. 9, line 52).

Method

III. Claims **24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) as applied to claims 1, 3, 8-16, 19-20 and 28-30 above.

Cobley is as applied above and incorporated herein.

Cobley teaches a method of electrolytically depositing copper coatings on metal or plastic surfaces, comprising:

- bringing the surfaces **16** (= a workpiece) into contact with the solution **14** (= a metal plating bath) according to claim 1 and electrolytically depositing copper onto the surfaces (page 6, [0062] to [0063]).

The metal or plastic surfaces are printed circuit board material (page 3, [0021]).

The method includes the step of moving said metal or plastic surfaces in vertical and/or horizontal conveyorized plating lines (page 6, [0061]; and Fig. 2).

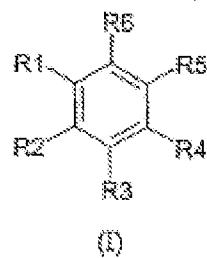
Solution

IV. Claims **1, 4-16, 19-20, 28 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1).

Gabe teaches an aqueous acidic solution for electrolytically depositing copper coatings, said solution containing:

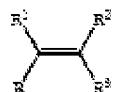
- copper ions (= a copper compound) [page 6, [0057]],
- at least one oxygen-containing, high molecular additive (= an oxygen containing high molecular weight compound) [page 5, [0052]], and
- at least one water soluble sulfur compound (= a brightener) [page 5, [0050]],

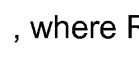
characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R1, R2, R3, R4, R5 and R6 are each independently radicals selected

from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having 1- 4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R₁, R₂, R₃, R₄, R₅ and R₆ which are halogen ranges from 1-5 (= an



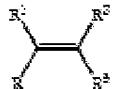
alcohol including compounds having formula I: , where R¹ and R² are taken together along with the atoms to which they are attached to form a 5 to 7 membered carbon ring) [page 3, [0030] to page 4, [0033]].

Alkyl is branched or unbranched and is selected from the group consisting of methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl and tert-butyl (page 3, [0031]).

The alkyl having 1-4 carbon atoms is hydroxyalkyl and that it is branched or unbranched (= a hydroxyl (C₁-C₂₀) linear, branched, or cyclic alkyl) [page 3, [0031]].

At least one hydroxyalkyl is hydroxymethyl (= a hydroxyl (C₁-C₂₀) linear, branched, or cyclic alkyl) [page 3, [0031]].

The at least one aromatic halogen derivative is selected from the group consisting of 2-chlorobenzaldehyde; 2-chlorophenol; 4-chloro-3-methylphenol; 2-chloro-4,5-dimethylphenol; 4-chloro-3,5-dimethylphenol; 4-chlorophenol; 3-chlorophenol; o-chloroacetophenone; 2-chlorobenzyl alcohol; 4-bromo-2,6-dimethylphenol; 4-bromophenol; 2,4-dichlorobenzyl alcohol; 2,6-dibromo-4-methylphenol; 2,5-dichlorophenol; 3,5-dibromobenzaldehyde; 2,5-dibromobenzoic acid; 2,4,6-trichlorophenol; and 2,3,6-trichlorobenzaldehyde (= an alcohol including compounds



having formula I: , where R¹ and R² are taken together along with the atoms to which they are attached to form a 5 to 7 membered carbon ring) [page 3, [0030] to page 4, [0033]].

The at least one oxygen-containing, high molecular additive is selected from the group consisting of polyvinyl alcohol; carboxymethyl cellulose; polyethylene glycol; polypropylene glycol; stearic acid polyglycol ester; oleic acid polyglycol ester; stearyl alcohol polyglycol ether; nonylphenol-polyglycol ether; octanol polyalkylene glycol ether; octanediol-bis- (polyalkylene glycol ether); poly(ethylene glycol-ran-propylene glycol); poly(ethylene glycol)-block-poly(propylene glycol)-block-poly(ethylene glycol); and poly(propylene glycol)-block-poly(ethylene glycol)-block-poly(propylene glycol) [page 5, [0052]].

The at least one water soluble sulfur compound is selected from the group consisting of organic, nitrogen-free thio compounds and the salts thereof (page 5, [0050]).

The salts contain alkali or earth alkali metal ions, selected from the group consisting of sodium, potassium, magnesium and calcium (page 5, [0050]).

The at least one organic nitrogen-free thio compound is selected from the group consisting of sodium salt of 3-(benzthiazolyl-2-thio)-propylsulfonic acid; sodium salt of 3-mercaptopropane-1-sulfonic acid; disodium salt of thiophosphoric acid-O-ethyl-bis-(ω -sulfopropyl)-ester; trisodium salt of thiophosphoric acid-tris-(ω -sulfopropyl)-ester;

sodium salt of ethylenedithio dipropyl sulfonic acid; disodium salt of bis-(ρ -sulfophenyl)-disulfide; disodium salt of bis-(ω -sulfopropyl)-sulfide; disodium salt of bis-(ω -sulfopropyl)-disulfide; disodium salt of bis-(ω -sulfohydroxypropyl)-disulfide; disodium salt of bis-(ω -sulfobutyl)-disulfide; sodium salt of methyl-(ω -sulfopropyl)-disulfide; sodium salt of methyl-(ω -sulfobutyl)-trisulfide; potassium salt of O-ethyl-dithiocarbonic acid-S-(ω -sulfonyl)-ester; and thioglycolic acid (page 5, [0052]).

Acid is contained in the solution and that the acid is selected from the group consisting of sulfuric acid, hydrochloric acid, fluoboric acid and methanesulfonic acid (= sulfuric acid) [page 8, [0074]].

The solution additionally contains chloride ions (page 5, [0049]).

The chloride ions have been added to the solution in the form of sodium chloride and/or of hydrochloric acid (= HCl) [page 5, [0049]].

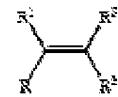
The solution additionally contains at least one organic, nitrogen-containing compound (page 5, [0051]).

The at least one nitrogen-containing thio compound is selected from the group consisting of thiourea; N-acetylthiourea; N-trifluoroacetyl thiourea; N-ethylthiourea; N-cyanoacetyl thiourea; N-allylthiourea; o-tolylthiourea; N,N'-butylene thiourea; thiazolidine thiol-2; 4-thiazoline thiol-2; imidazolidine thiol-2-(N,N'-ethylene thiourea); 4-methyl-2-pyrimidine thiol; and 2-thiouracil (= thiourea) [page 5, [0051]].

The solution additionally contains at least one polymeric nitrogen compound (page 5, [0051]).

The at least one polymeric nitrogen compound is selected from the group consisting of polyethylene imine, polyethylene imide, polyacrylic acid amide, polypropylene imine, polybutylene imine, N-methyl polyethylene imine, N-acetyl polyethylene imine, N-butyl polyethylene imine (= alkylated polyalkyleneimine) [page 5, [0051]].

The solution characterized in that the aromatic halogen derivative of general formula (I) is not any one of 2-chloro-4-hydroxybenzaldehyde, 4-chlororesorcinol and 3-



chlorophenol (= an alcohol including compounds having formula I: , where R¹ and R² are taken together along with the atoms to which they are attached to form a 5 to 7 membered carbon ring) [page 3, [0030] to page 4, [0033]].

The solution of Gabe differs from the instant invention because Gabe does not disclose the following:

a. Wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/L, as recited in claim 1.

Gabe teaches that the alcohols are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath (= about 1 mg/L to 100,000 mg/L) [page 5, [0046]].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the at least one aromatic halogen derivative described by Gabe with wherein the concentration of the at least one

aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/L because the word “about” disclosed by Gabe permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

With regards to a difference of 0.5 mg/L (= 1 mg/L - 0.5 mg/L), it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed “critical” ranges and Applicant has the burden of proving such criticality; even though Applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP § 2144.05].

V. Claims **17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claims 1, 4-16, 19-20 and 28 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

Gabe is as applied above and incorporated herein.

The solution of Gabe differs from the instant invention because Gabe does not disclose the following:

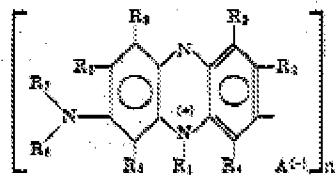
- a. Wherein the solution additionally contains at least one polymeric phenazinium compound, as recited in claim **17**.
- b. Wherein the at least one polymeric phenazinium compound is selected from the group consisting of poly(6-methyl-7-dimethylamino-5-phenyl-phenazinium sulfate); poly(2-methyl-7-diethylamino-5-phenyl-phenazinium chloride); poly(2-methyl-7-dimethylamino-5-phenyl-phenazinium sulfate); poly(5-methyl-7-dimethylamino-phenazinium acetate); poly(2-methyl-7-anilino-5-phenyl-phenazinium sulfate); poly(2-methyl-7-dimethylamino-phenazinium sulfate); poly(7-methylamino-5-phenyl-phenazinium acetate); poly(7-ethylamino-2,5-diphenyl-phenazinium chloride); poly (2,8-dimethyl-7-diethylamino-5-p-tolyl-phenazinium chloride); poly(2,5,8-triphenyl-7-dimethylamino-phenazinium sulfate); poly(2,8-dimethyl-7-amino-5-phenyl-phenazinium sulfate); and poly(7-dimethylamino-5-phenyl-phenazinium chloride), as recited in claim **18**.

Gabe teaches that:

Aromatic and aliphatic quaternary amines also may be added to plating baths to improve deposit brightness. Dyes of the phenazine class (Safranine type) and phenazine azo dyes (Janus Green B type) may be employed as levelers. Polyethers are used to improve thickness and uniformity of metal plating (col. 9, line 65 to col. 10, line 3).

Like Gabe, **Todt** teaches an acid copper electroplating bath. Todt teaches that an acid copper electrolyte which is characterized by a content of at least one compound

of the general formula:



(col. 2, lines 7-22). One obtains an especially clear and sudden improvement of the luster and of the leveling effect by adding the substances according to the invention to copper electrolytes which contain as brighteners oxygen-containing, high molecular compounds and organic thio compounds, preferably comprising one or more water-solubilizing group (col. 8, line 62 to col. 9, line 52).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution described by Gabe with (a) and (b) above because adding at least one polymeric phenazinium compound would have improved the luster and the leveling effect of copper electrolytes as taught by Todt (col. 8, line 62 to col. 9, line 52).

Method

VI.

Claims **24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claims 1, 4-16, 19-20 and 28 above.

Gabe is as applied above and incorporated herein.

Gabe also teaches a method of electrolytically depositing copper coatings on metal or plastic surfaces, comprising:

- bringing the surfaces **16** (= a workpiece) into contact with the solution **14** (= a metal plating bath) according to claim 1 and electrolytically depositing copper onto the surfaces (page 7, [0067] to [0068]).

The metal or plastic surfaces are printed circuit board material (page 8, [0072]).

The method includes the step of moving said metal or plastic surfaces in vertical and/or horizontal conveyorized plating lines (page 7, [0066]; and Fig. 2).

Solution

VII. Claim **32** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) as applied to claim 31 above.

Cobley is as applied above and incorporated herein.

The solution of Cobley differs from the instant invention because Cobley does not disclose wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.9 mg/l, as recited in claim **32**.

Cobley teaches that the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath (= about 1 mg/L to 100,000 mg/L) [page 4, [0040]].

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to have modified the concentration of the at least one aromatic halogen derivative described by Cobley with wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.9 mg/l because the word “about” disclosed by Cobley permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

With regards to a difference of 0.1 mg/L (= 1 mg/L - 0.9 mg/L), it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed “critical” ranges and Applicant has the burden of proving such criticality; even though Applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP § 2144.05].

VIII. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claim 31 above.

Gabe is as applied above and incorporated herein

The solution of Gabe differs from the instant invention because Gabe does not disclose wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.9 mg/l, as recited in claim **32**.

Gabe teaches that the alcohols are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath (= about 1 mg/L to 100,000 mg/L) [page 5, [0046]].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the at least one aromatic halogen derivative described by Gabe with wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.9 mg/l because the word “about” disclosed by Gabe permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

With regards to a difference of 0.1 mg/L (= 1 mg/L - 0.9 mg/L), it has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed “critical” ranges and Applicant has the burden of proving such criticality; even though Applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more

particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP § 2144.05].

RE: REMARKS

Applicants state that claim 1 now recites the concentration of 0.005 mg/l to 0.5 mg/l and therefore does not provide the tolerance that would lead one to the claimed range of the Cobley et al. reference.

In response, Cobley teaches that the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath (= about 1 mg/L to 100,000 mg/L) [page 4, [0040]]. Cobley would have provided the tolerance that would lead one to the claimed range.

Applicants state that the experiments show that the concentration of the additives used is very sensitive to the quality of the coating obtained. If the concentration is large, the quality is such that the coatings obtained are not satisfactory for decorative purposes, whereas, with low level application of the additives, excellent results are achieved.

In response, the concentration of the at least one aromatic halogen derivative is a result-effective variable and one having ordinary skill in the art has the skill to calculate the concentration that would have determined the success of the desired

reaction to occur (MPEP § 2141.03 and § 2144.05(II)(B)).

Applicants state that Cobley et al. use aldehyde compounds and Gabe et al. use alcohols, to inhibit or retard or prevent or reduce the consumption degradation of plating bath additives, which is due to oxidation of the additives. Therefore, one of ordinary skill in the art would not take from the references to reduce concentrations (e.g., to the level of Applicant's concentrations) since the concentration of the compounds to inhibit the degradation of the other additives must be present in a much larger amount than the latter additives because they are consumed while inhibiting, retarding, preventing or reducing consumption/degradation of the plating bath additives.

Applicants state that the aromatic halogen derivatives of the present invention are active agents which directly interact with the plating process and whose purpose is not to reduce or prevent degradation of the bath additives. Therefore, the compounds are not required to be present in the plating solution in a large amount, and for this reason, the effectiveness of the low concentration levels claimed by Applicant provide results that the concentrations of the cited art, if applied as the office action proposes to do, would not.

In response, the Applicant has a different reason for, or advantage resulting from doing what the prior art relied upon has suggested, it is noted that it is well settled that this is not demonstrative of nonobviousness. *In re Kronig* 190 USPQ 425, 428 (CCPA 1976); *In re Linter* 173 USPQ 560 (CCPA 1972); the prior art motivation or advantage

may be different than that of Applicants while still supporting a conclusion of obviousness. *In re Wiseman* 201 USPQ 658 (CCPA 1979); *Ex parte Obiaya* 227 USPQ 58 (Bd. of App. 1985) [MPEP § 2144].

The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage it (MPEP § 2141.02).

Applicants state that both Cobley et al. and Gabe et al. instruct one of ordinary skill in the art to use a concentration of their additive preserving compounds which is rather larger than the lower limit set forth in each of these references, and is not lower than the lower limit.

Applicants state that here, the disclosure of the prior art would not have been looked to by one of ordinary skill in the art for a teaching of the present invention, where concentrations lower than the lower limit of the concentration range in the cited references are used. Where a reference teaches away from the invention that is sufficient to defeat an obviousness claim.

In response, there is no requirement that the claimed limitations be expressly articulated in one or more of the references. The teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. *Ashland Oil v. Delta Resins* 227 USPQ 657 (CAFC 1985). The test for combining references is what the combination of disclosures taken as a whole

would suggest to one of ordinary skill in the art. *In re McLaughlin* 170 USPQ 209 (CCPA 19710; *In re Rosselet* 146 USPQ 183 (CCPA 1960). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In re Simon* 174 USPQ 114 (CCPA 1972); *In re Richman* 165 USPQ 509, 514 (CCPA 1970).

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. Denied, 469 U.S. 851 (1984). In addition, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use, see *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Further, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments, see *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See MPEP § 2123, § 2141.02, and § 2145(X)(D)(1).

The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed (MPEP § 2141.02).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-

1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edna Wong/
Primary Examiner
Art Unit 1795

EW
August 4, 2010